CLAIMS:

1. A short-circuiting member being characterized by:

a plurality of components, each having an outer circumference and an inner circumference, and each of the plurality of components including:

a plurality of outer circumference terminals arranged along the outer circumference;

a plurality of inner circumference terminals arranged along the inner circumference; and

a plurality of connection portions, each connecting a corresponding one of the outer circumference terminals and a corresponding one of the inner circumference terminals with the connection portions separated from each other by a predetermined angle in a circumferential direction, wherein:

the plurality of outer circumference terminals, the plurality of inner circumference terminals, and the plurality of connection portions are substantially formed along the same plane;

the plurality of components are laminated in a state in which the connection portions of one of the plurality of components are reversed to the connection portions of another one of the plurality of components; and

the outer circumference terminals that are adjacent in a lamination direction are in contact with each other, the inner circumference terminals that are adjacent in the lamination direction are in contact with each other, and the connection portions that are adjacent in the lamination direction are not in contact with each other.

2. The short-circuiting member according to claim 1, characterized in that the adjacent connection portions are bent or curved so as to be spaced from each other.

3. The short-circuiting member according to claim 1, characterized in that each of the plurality of connection portions is thinner than the outer circumference terminals and the inner circumference terminals, the short-circuiting member further including:

an insulator arranged between the adjacent connection portions.

4. The short-circuiting member according to claim 3, being characterized by:

an interval maintaining member for maintaining an interval between the adjacent connection portions.

5. The short-circuiting member according to claim 4, characterized in that:

the insulator includes a positioning portion for positioning the plurality of components in the circumferential direction.

6. The short-circuiting member according to any one of claims 1 to 5, characterized in that:

each of the plurality of connection portions is formed along an involute curve.

7. The short-circuiting member according to any one of claims 1 to 6, characterized in that:

at least either one of the plurality of outer circumference terminals and the plurality of inner circumference terminals include fitting recesses and fitting projections that are formed alternately in the circumferential direction.

8. The short-circuiting member according to claim 7, characterized in that:

the fitting recesses and the fitting projections are formed in a substantially middle part of the plurality of outer circumference terminals or the plurality of inner circumference terminals.

9. A commutator being characterized by:

the short-circuiting member according to any one of claims 1 to 8; and

a plurality of segments connected to the plurality of outer circumference terminals or the plurality of inner circumference terminals.

10. A commutator including a commutator main body having a plurality of segments arranged along a circumference, the commutator being characterized by:

a short-circuiting member including a plurality of components, each having an outer circumference and an inner circumference, and each of the plurality of components including:

a plurality of outer circumference terminals arranged along the outer circumference;

a plurality of inner circumference terminals arranged along the inner circumference; and

a plurality of connection portions, each connecting a corresponding one of the outer circumference terminals and a corresponding one of the inner circumference terminals with the connection portions separated from each other by a predetermined angle in a circumferential direction, wherein:

the plurality of outer circumference terminals, the plurality of inner circumference terminals, and the plurality of connection portions are substantially formed along the same plane;

the plurality of components are laminated in a state in which the connection portions of one of the plurality of components are reversed to the connection portions of another one of the plurality of components; and

the outer circumference terminals that are adjacent in a lamination direction are in contact with each other, the inner circumference terminals that are adjacent in the lamination direction are in contact with each other, and the connection portions that are adjacent in the lamination direction are not in contact with each other.

11. The commutator according to claim 10, characterized in that:

each of the plurality of outer circumference terminals has a hooking portion, projecting from the corresponding one of the outer circumference terminals in a radial direction, for hooking a winding wire.

12. The commutator according to any one of claims 9 and 10, characterized in that:

the plurality of segments form a substantially cylindrical shape, and the commutator main body is formed at an inner side of the plurality of segments and has an accommodation portion for accommodating the short-circuiting member.

13. The commutator according to claim 12, characterized in that:

the short-circuiting member is arranged in the commutator main body in a manner that the short-circuiting member does not project from the commutator main body in an axial direction.

14. The commutator according to claim 12 or 13, characterized in that:

the commutator main body has a main body insulator having a through-hole through which a rotary shaft is inserted at the inner side of the plurality of segments; and

the plurality of inner circumference terminals are arranged outward from the through-hole.

15. The commutator according to claim 14, characterized in that:

the main body insulator includes an annular portion formed between the plurality of inner circumference terminals and the through-hole.

16. The commutator according to any one of claims 12 to 15, characterized in that:

the short-circuiting member is arranged in the commutator main body without projecting from the commutator main body in a radial direction.

17. The commutator according to any one of claims 12 to 16, characterized in that:

the plurality of segments each have a recess formed in an end of the segment;

the plurality of outer circumference terminals each have a projection insertable in the corresponding recess; and

the short-circuiting member is arranged at an end of the commutator main body in a state in which the projections of the outer circumference terminals are inserted in the recesses of the segments.

18. The commutator according to any one of claims 12 to 15, characterized in that:

the plurality of segments each have a recess formed in an end of the segment and include a pair of arms;

the plurality of outer circumference terminals includes a hooking portion, projecting through the corresponding recess, for hooking a winding wire; and

each hooking portion is fixed by bending together the pair of arms of the corresponding recess.

19. The commutator according to any one of claims 12 to 18, characterized in that:

the plurality of outer circumference terminals each come in contact with an inner circumference of the corresponding segment.

20. A method for manufacturing a short-circuiting member according to any one of claims 1 to 8, the method being characterized by the steps of:

performing a punching process on a plurality of conductive plate members so that the plurality of connection portions are spaced from one another in a circumferential direction and shaping-stage connection portions are formed for connecting either one of the plurality of outer circumference terminals and the inner circumference terminals;

laminating the plurality of punched-out conductive plate members so that the connection portions of one of the plurality of components are reversed to the connection portions of another one of the plurality of components; and

removing the shaping-stage connection portions from the plurality of laminated conductive plate members.

21. The manufacturing method according to claim 20, being characterized by the step of:

filling and curing an insulator for maintaining an interval between the connection portions during the period between the laminating step and the removing step.

22. The manufacturing method according to claim 21, characterized in that:

the insulator filling step includes a step of arranging in a mold an interval maintaining member for maintaining the interval between the connection portions that are adjacent in a lamination direction.

23. The manufacturing method according to any one of claims 20 to 22, characterized in that the punching step includes:

forming a plurality of connection portions that are oriented in a first direction by performing the punching process on a first conductive plate member; and

forming a plurality of connection portions that are oriented in a second direction that is reverse to the first direction by perfuming the punching process on a second conductive plate member.